

# **Differences Between Terra/Aqua Crosstrack and RAP LW TOA Fluxes**

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# Overview

- Motivation

- use XT-RAP differences to evaluate ADM errors

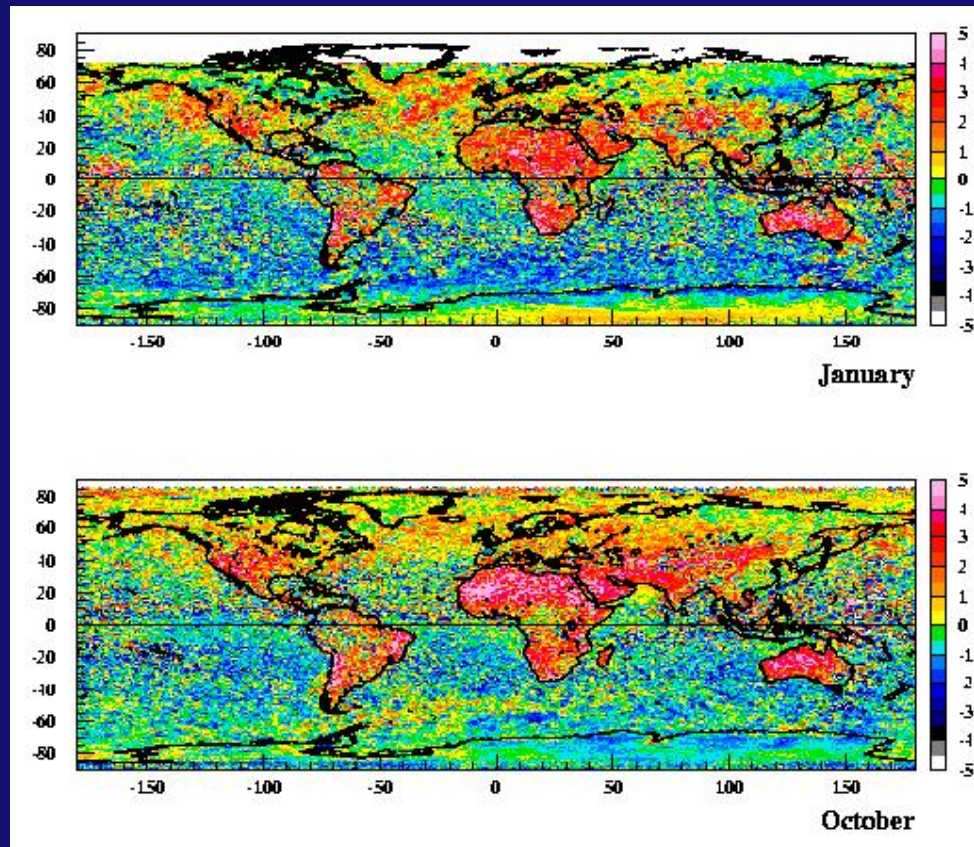
- Data

- CERES SSF from Terra and Aqua (Day/Night)
- 2003 (January, April, July and October)

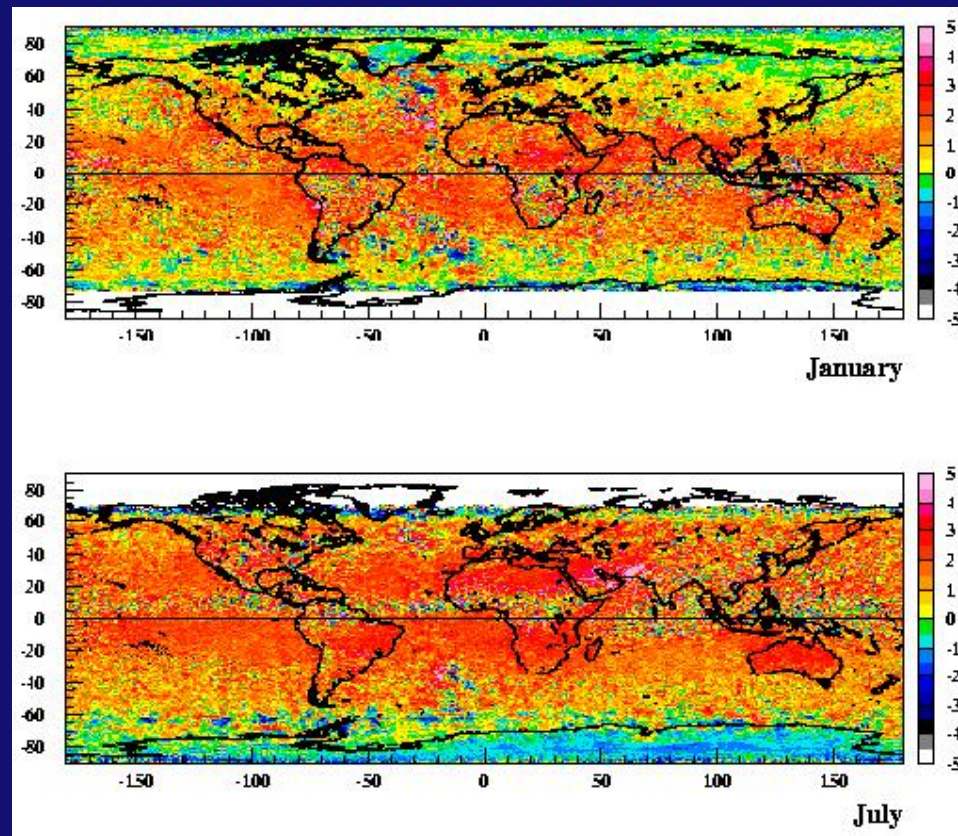
- XT-RAP Computations

- Determine daily  $1^{\circ} \times 1^{\circ}$  regional mean fluxes for FAP and RAP for each month. Determine  $\Delta F$  for each target area.
- Monthly global means are computed using regions that have valid daily RAP and FAP LW mean fluxes.
- Check consistency of results with IWG direct comparison fluxes

## Daytime Mean Terra LW Flux Difference (XT-RAP)

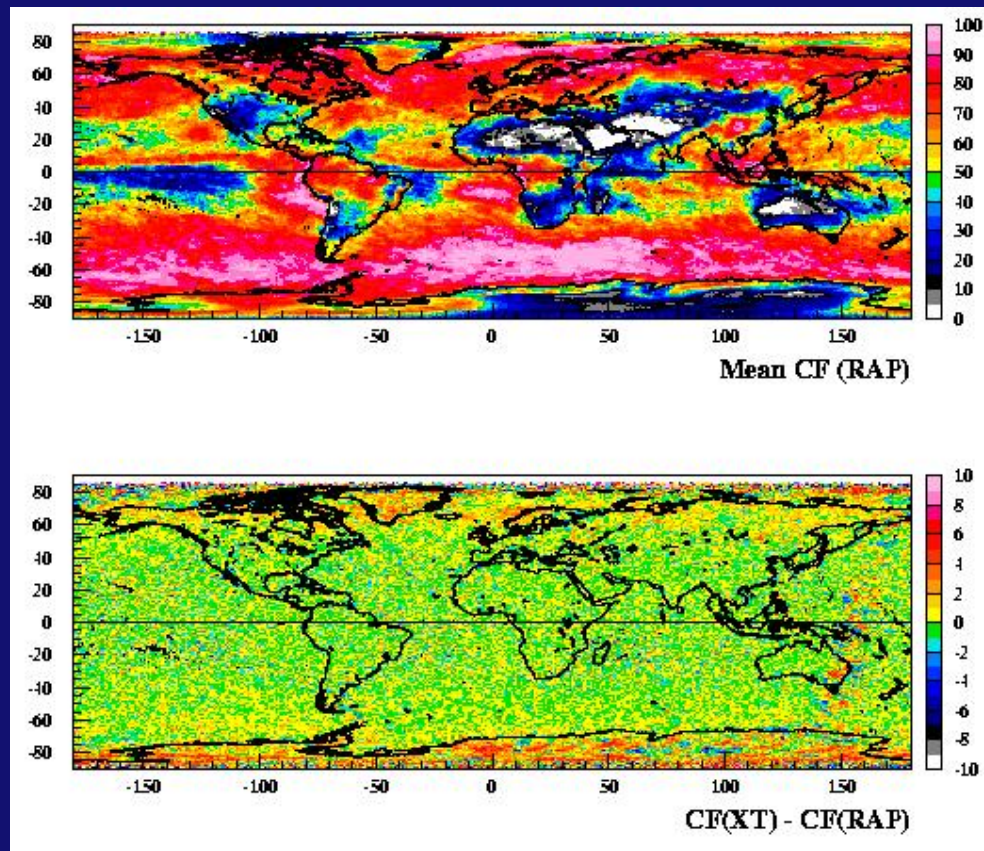


## Nighttime Mean Terra LW Flux Difference (XT-RAP)

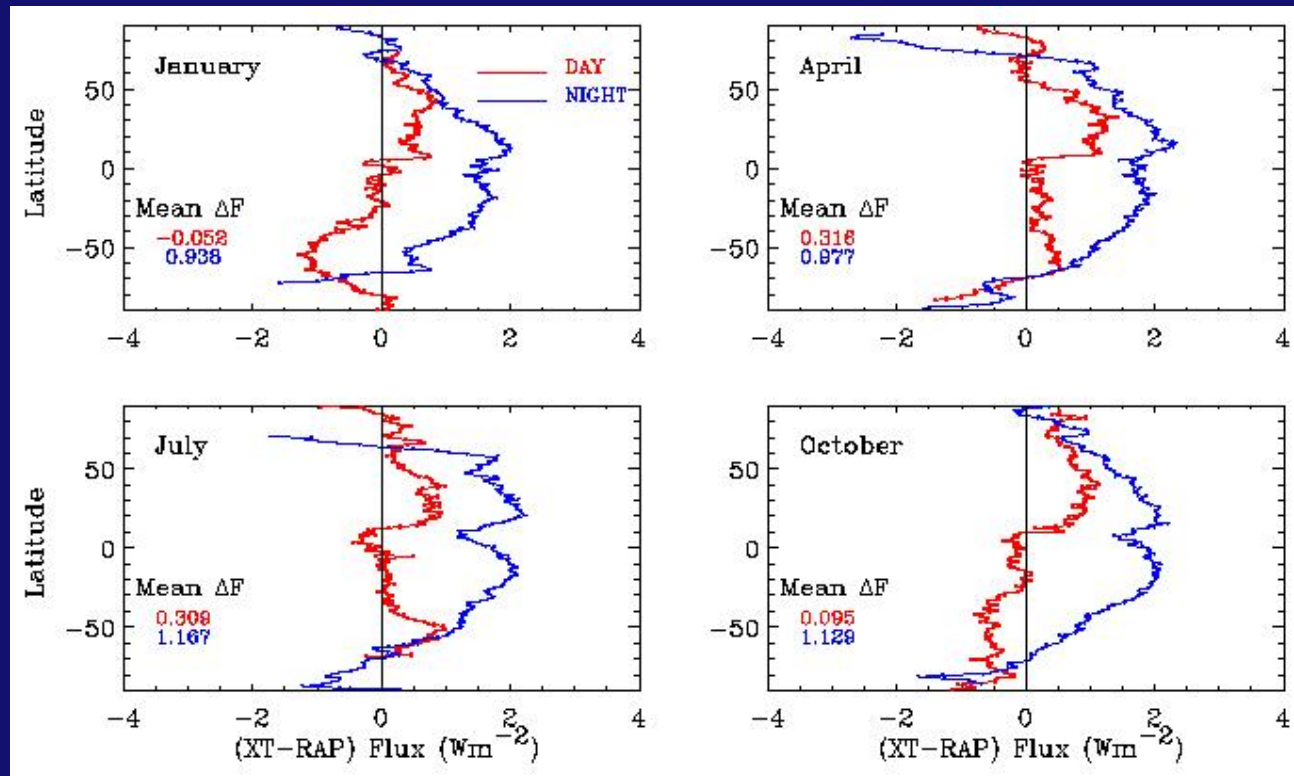




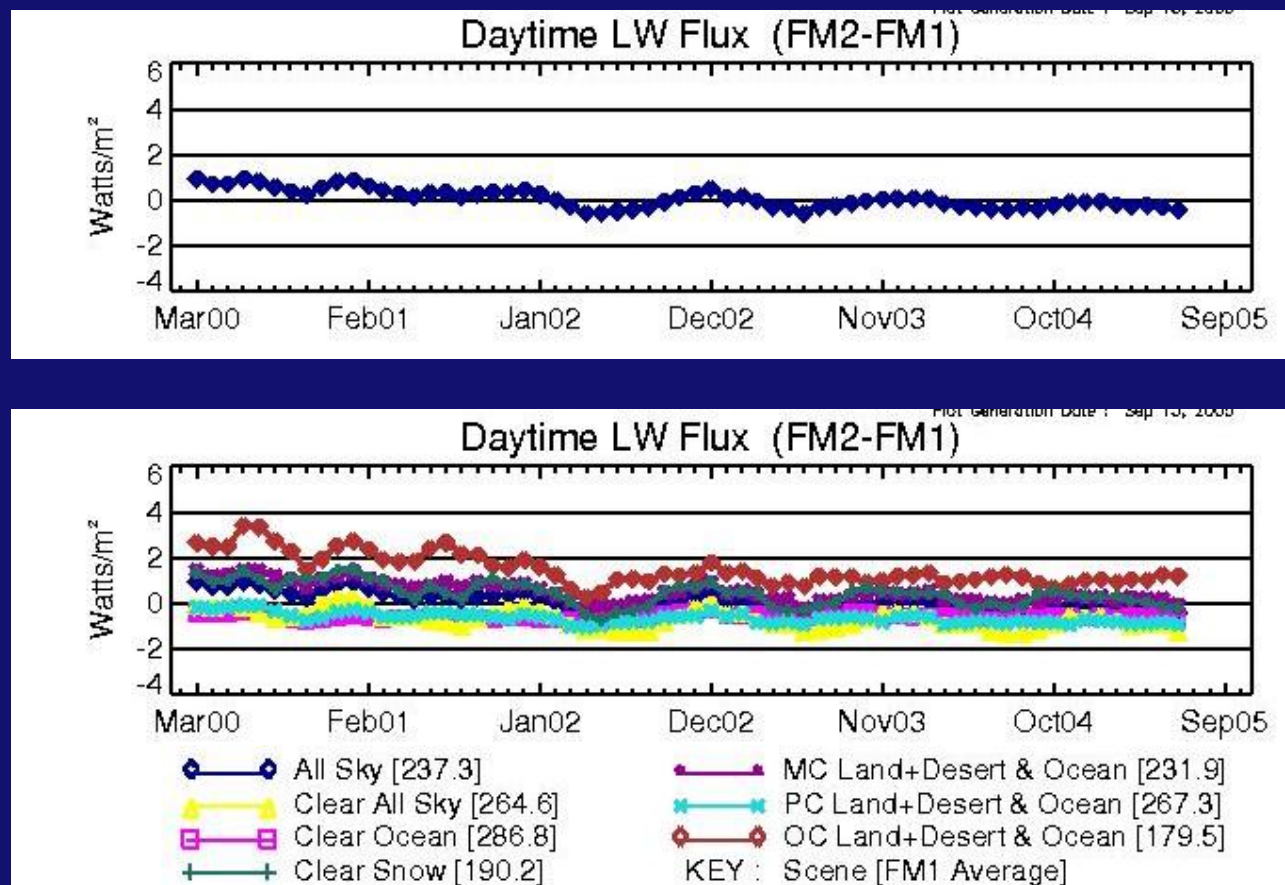
## Mean CF and CF Difference for October (Day)



## Terra Mean Zonal Flux Difference (XT-RAP)

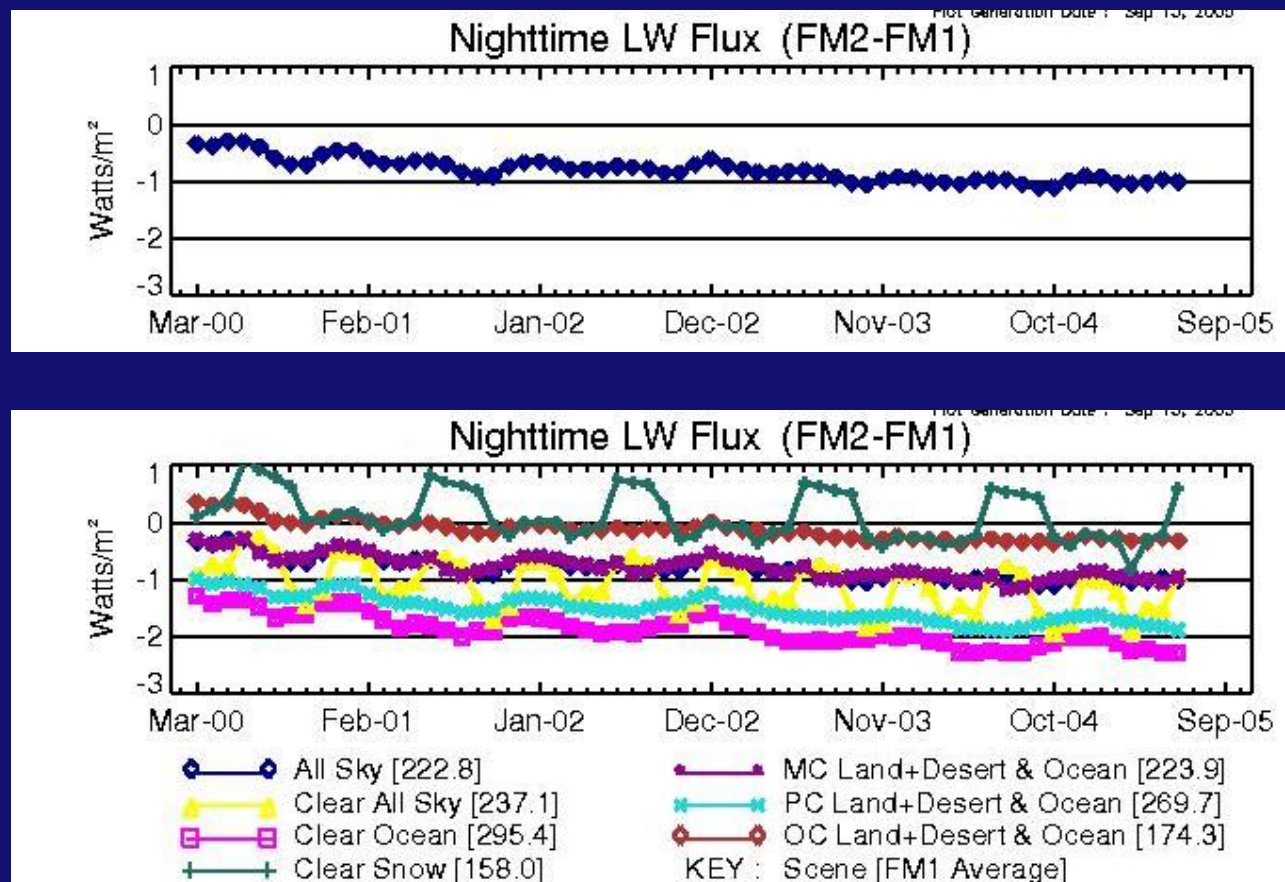


# Terra Global Matching Direct Comparison Fluxes (Day)



\* Figure from CERES IWG

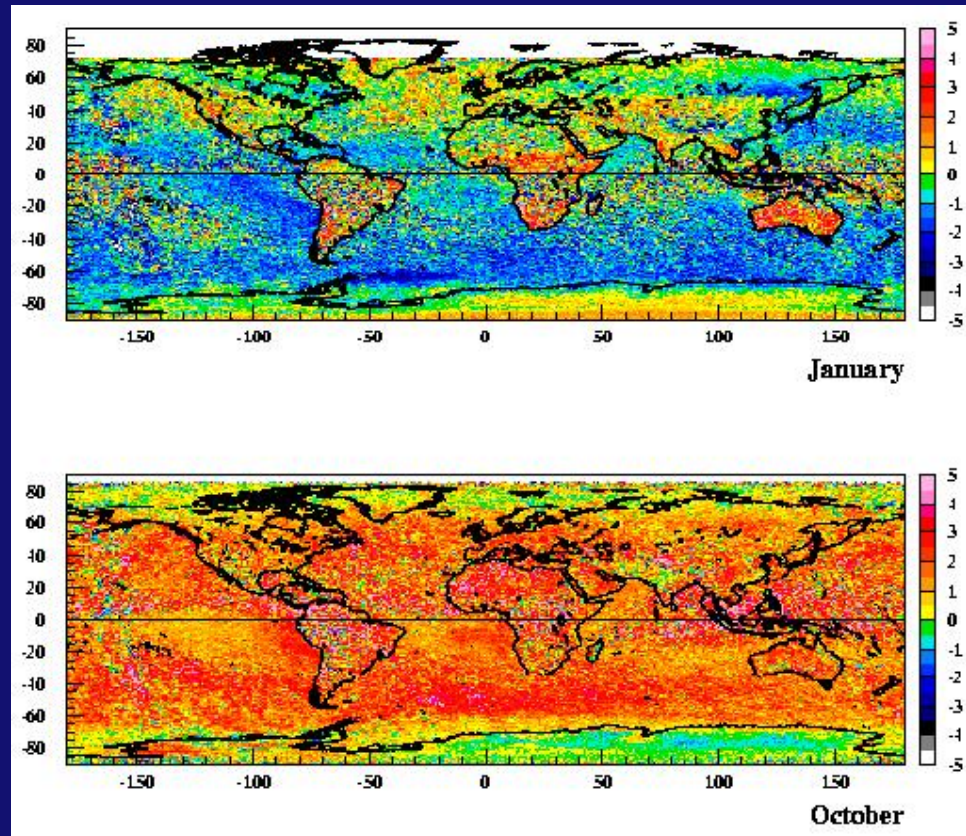
## Terra Global Matching Direct Comparison Fluxes (Night)



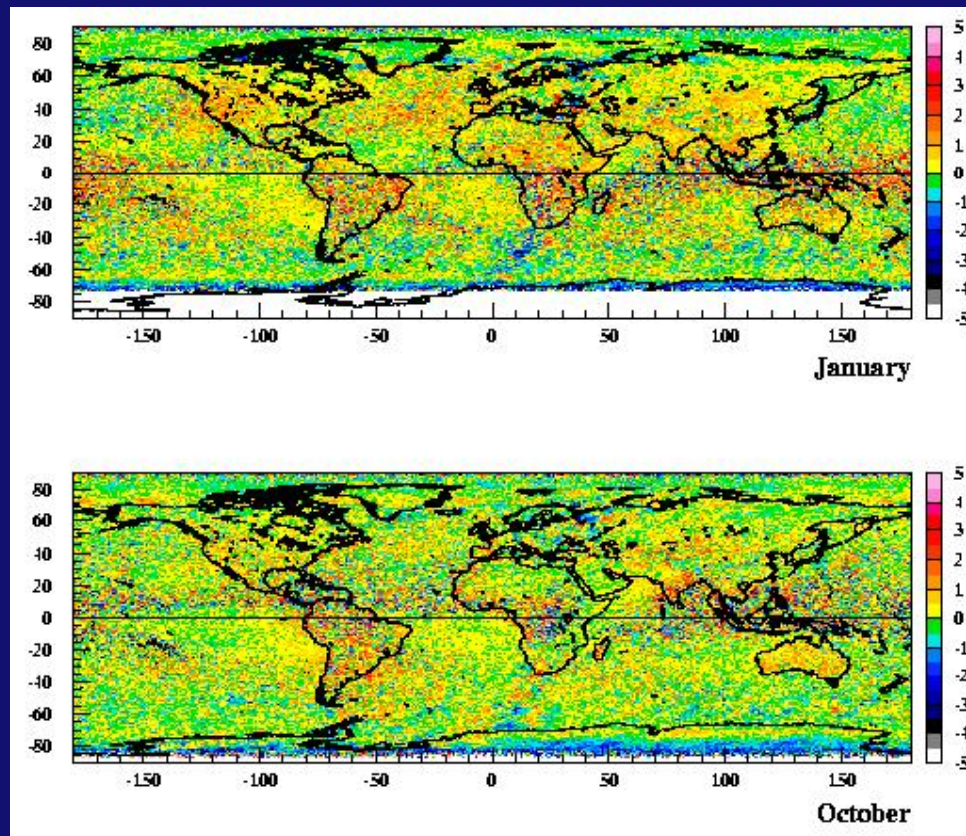
\* Figure from CERES IWG



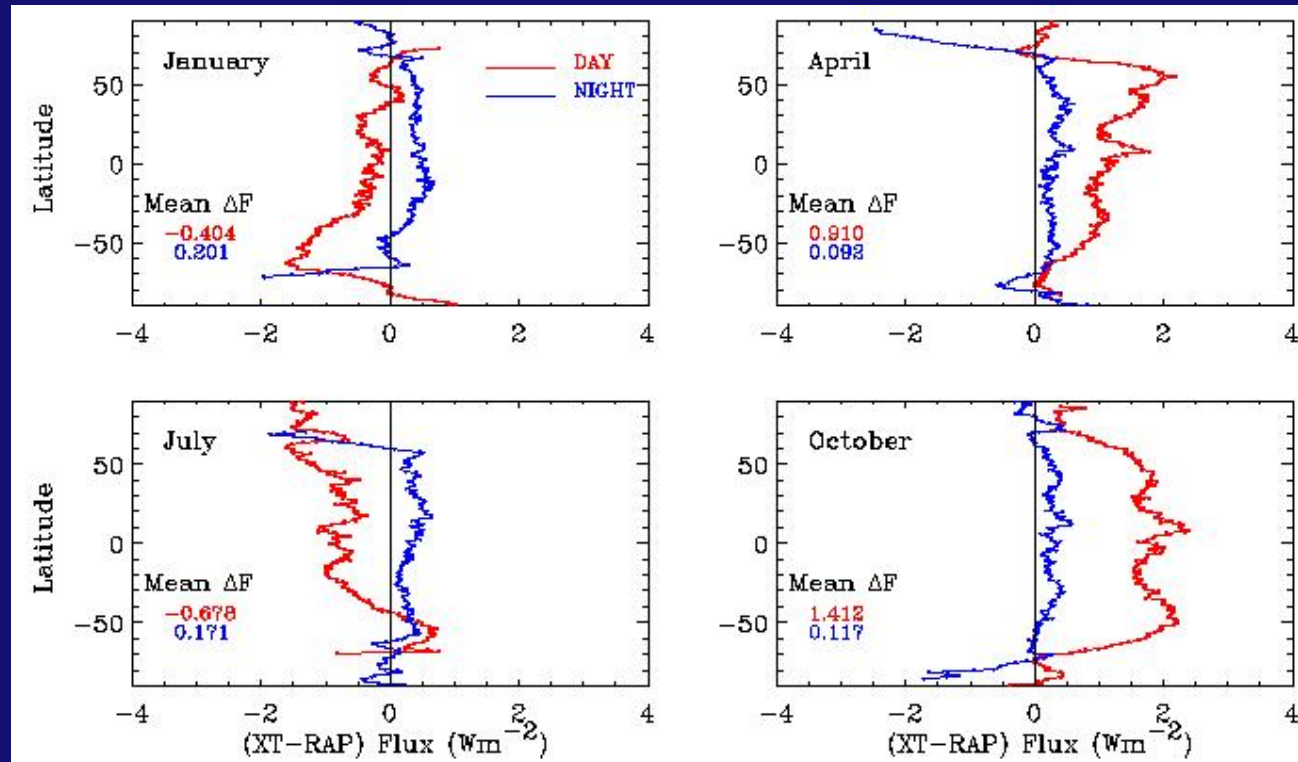
## Daytime Mean Aqua LW Flux Difference (XT-RAP)



## Nighttime Mean Aqua LW Flux Difference (XT-RAP)

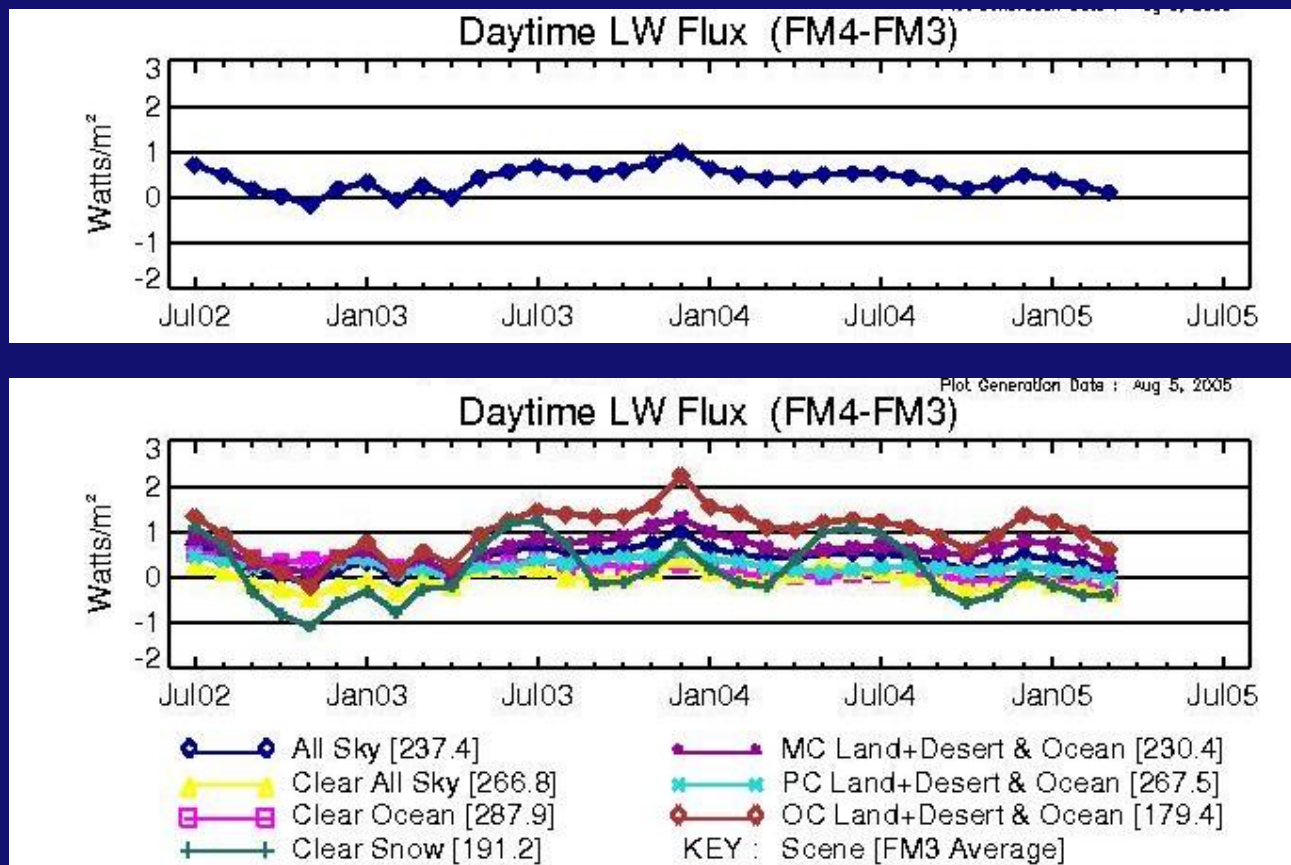


## Aqua Mean Zonal Flux Difference (XT-RAP)



Jan/Jul - FM3(XT), FM4(RAP)  
Apr/Oct - FM4(XT), FM3(RAP)

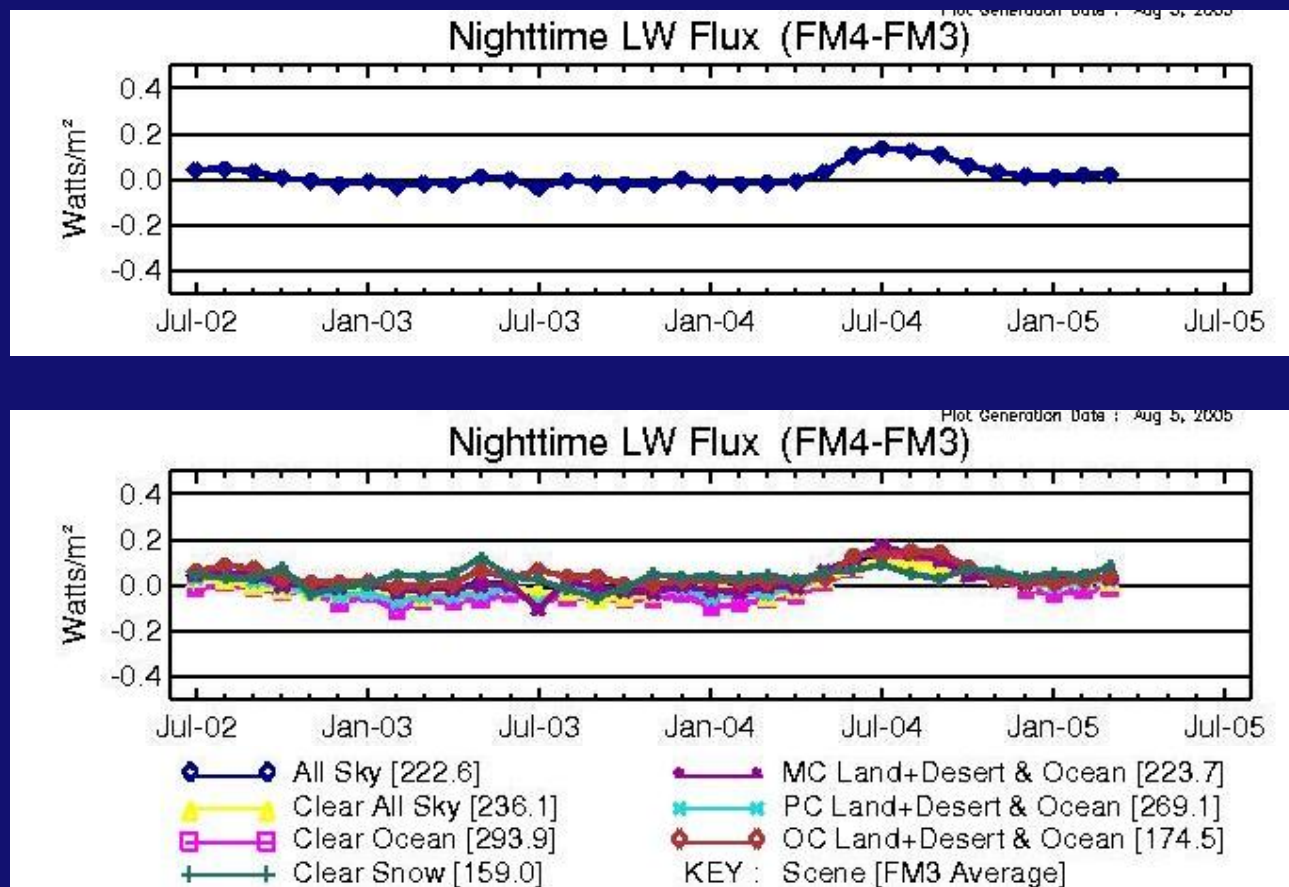
## Aqua Global Matching Direct Comparison Fluxes (Day)



\* Figure from CERES IWG



## Aqua Global Matching Direct Comparison Fluxes (Night)



\* Figure from CERES IWG



# Summary of Results

- Terra

- Day: Largest differences are over land ( $XT > RAP$ )  
Monthly mean differences are within  $0.4 \text{ Wm}^{-2}$
- Night: XT monthly mean fluxes are systematically larger than RAP fluxes (Mean  $\Delta F \rightarrow 1.0 \text{ Wm}^{-2}$ )

- Aqua

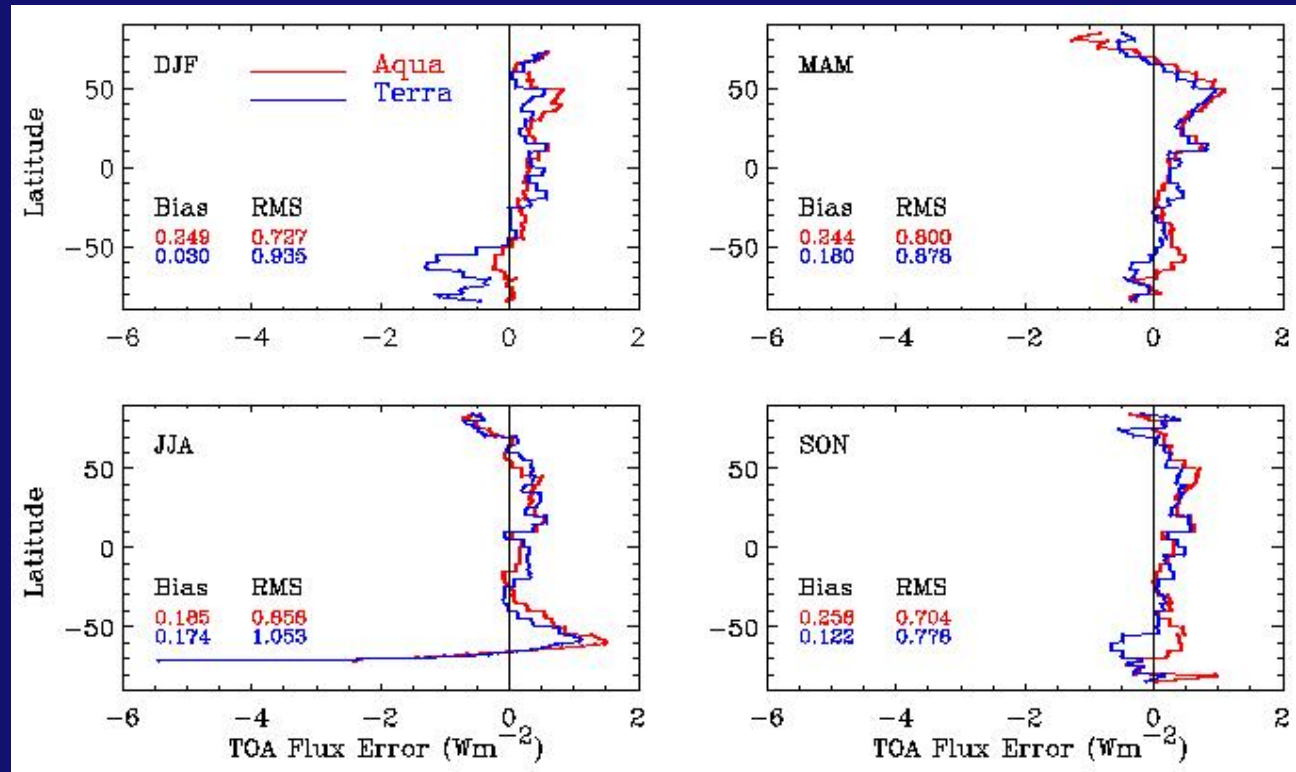
- Day: Apr/Oct XT monthly mean fluxes are larger than RAP fluxes and Jan/Jul XT monthly mean fluxes are smaller than RAP fluxes.
- Night: XT monthly mean fluxes are larger than RAP fluxes but within  $0.2 \text{ Wm}^{-2}$ .

- Flux differences are consistent with IWG Direct Comparison results

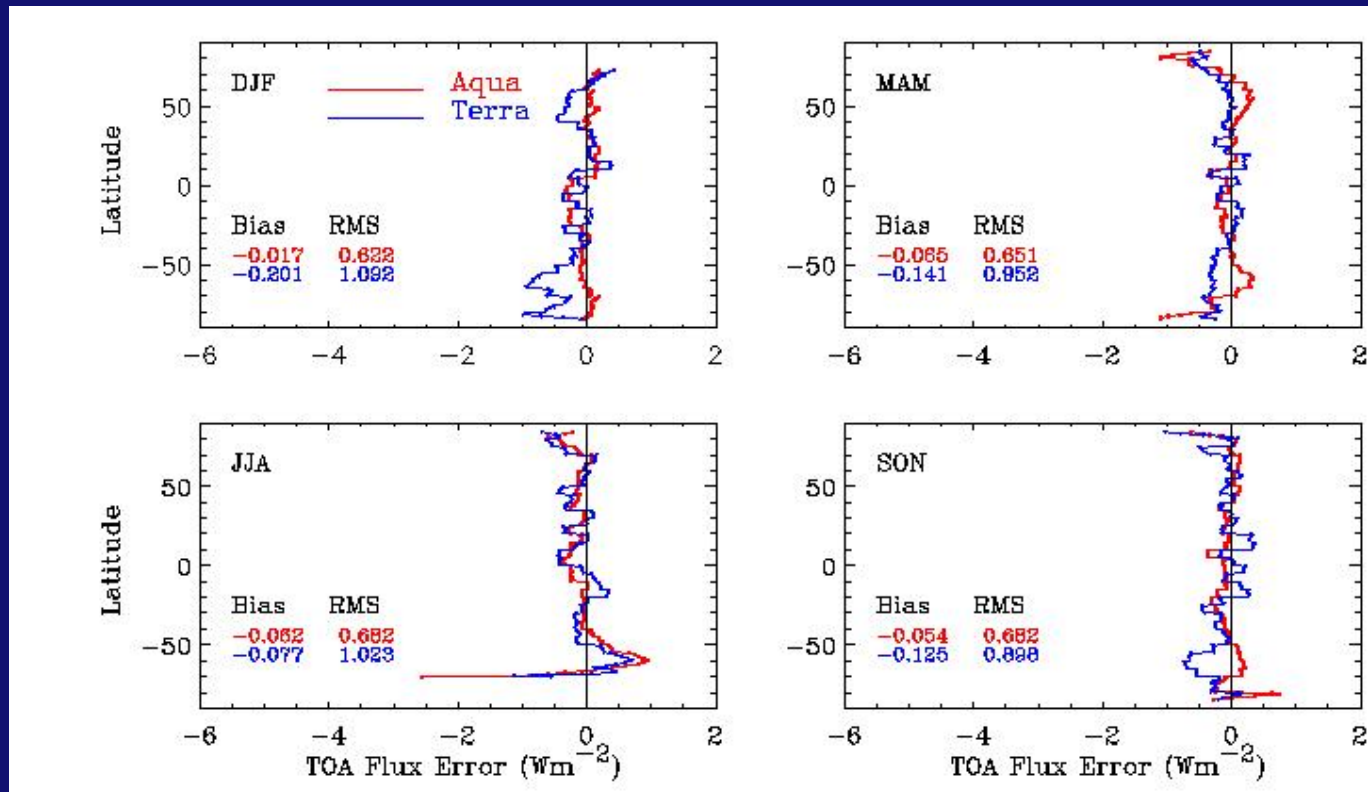
- Need to look at seasonal cases to guarantee sufficient sampling

# BACK-UP SLIDES

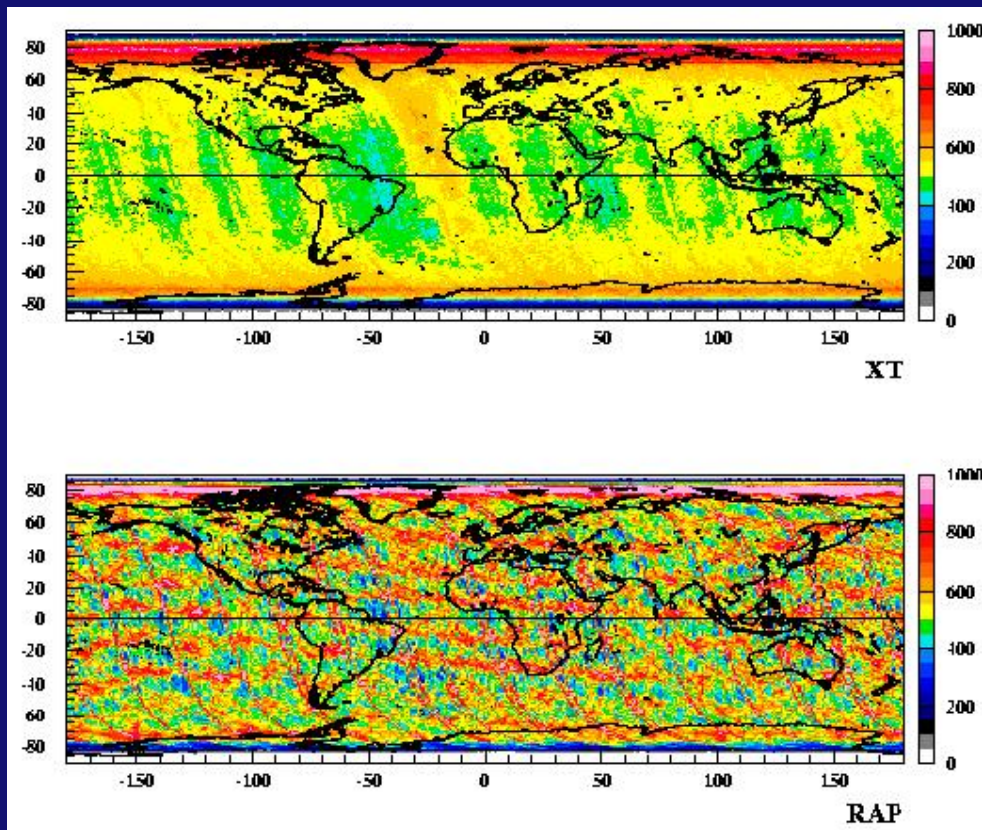
# LW TOA (Day) Flux Direct Integration Tests (XT Sampling)



## LW TOA (Day) Flux Direct Integration Tests (RAP Sampling)



## FOV Sampling for Oct 2003 (Day)





## FOV Sampling for Oct 2003 (Night)

